

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Commissioner  
US Department of Commerce  
United States Patent and Trademark  
Office, PCT  
2011 South Clark Place Room  
CP2/5C24  
Arlington, VA 22202  
ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

<b>Date of mailing (day/month/year)</b> 15 March 2001 (15.03.01)	<b>ETATS-UNIS D'AMERIQUE</b> in its capacity as elected Office
<b>International application No.</b> PCT/GB00/02712	<b>Applicant's or agent's file reference</b> AS/AM/P10844PC
<b>International filing date (day/month/year)</b> 14 July 2000 (14.07.00)	<b>Priority date (day/month/year)</b> 15 July 1999 (15.07.99)
<b>Applicant</b> CHURCHILL, Andrew, Philip	

**BEST AVAILABLE COPY**

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:

01 February 2001 (01.02.01)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was

☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

<p><b>The International Bureau of WIPO</b>  <b>34, chemin des Colombettes</b>  <b>1211 Geneva 20, Switzerland</b></p> <p>Facsimile No.: (41-22) 740.14.35</p>	<p>Authorized officer</p> <p><b>Pascal Piriou</b></p> <p>Telephone No.: (41-22) 338.83.38</p>
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## PATENT COOPERATION TREATY

A.S

From the  
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

MCCALLUM, William P.  
CRUIKSHANK & FAIRWEATHER  
19 Royal Exchange Square  
Glasgow G1 3AE  
GRANDE BRETAGNE

PCT

NOTIFICATION OF TRANSMITTAL OF  
THE INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT  
(PCT Rule 71.1)

Date of mailing  
(day/month/year) 02.11.2001

Applicant's or agent's file reference  
AS/AM/P10844PC

## IMPORTANT NOTIFICATION

International application No.  
PCT/GB00/02712

International filing date (day/month/year)  
14/07/2000

Priority date (day/month/year)  
15/07/1999

Applicant  
CHURCHILL, Andrew Philip

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.


## 4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

Name and mailing address of the IPEA/

 European Patent Office  
D-80298 Munich  
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## PATENT COOPERATION TREATY

REC'D 06 NOV 2001

## PCT

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT



(PCT Article 36 and Rule 70)

Applicant's or agent's file reference <b>AS/AM/P10844PC</b>	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. <b>PCT/GB00/02712</b>	International filing date (day/month/year) <b>14/07/2000</b>	Priority date (day/month/year) <b>15/07/1999</b>
International Patent Classification (IPC) or national classification and IPC <b>E21B21/10</b>		
Applicant <b>CHURCHILL, Andrew Philip</b>		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 8 sheets, including this cover sheet.  
☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).  
These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☒ Certain defects in the international application
- VIII ☒ Certain observations on the international application

Date of submission of the demand <b>01/02/2001</b>	Date of completion of this report <b>02.11.2001</b>
Name and mailing address of the international preliminary examining authority:  <b>European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465</b>	Authorized officer <b>Georgescu, M</b> Telephone No. +49 89 2399 7502 

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/GB00/02712

## I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

**Description, pages:**

1-24 as originally filed

**Claims, No.:**

1-35 as originally filed

**Drawings, sheets:**

1/6-6/6 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/GB00/02712

☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

## V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

### 1. Statement

Novelty (N)	Yes:	Claims	8, 9, 15-17, 20, 21, 32, 35
	No:	Claims	1-7, 10-14, 18, 19, 22-31, 33, 34
Inventive step (IS)	Yes:	Claims	
	No:	Claims	1-35
Industrial applicability (IA)	Yes:	Claims	1-35
	No:	Claims	

### 2. Citations and explanations see separate sheet

## VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:  
see separate sheet

## VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:  
see separate sheet

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

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International application No. PCT/GB00/02712

Reference is made to the following documents:

D1: US 4 645 006 A  
D2: US 2 128 352 A  
D3: US 5 499 687 A  
D4: EP 0 732 479 A

**V - Reasoned statement under Art. 35(2)**

**V-1 Claim 1**

D1, which is considered as the closest prior art, describes a fluid flow actuated downhole tool (10) being configurable in at least a first tool configuration (fig.1) and a second tool configuration (fig.2), the tool comprising:

a tubular housing (14)

an activating sleeve (98, 100, as a sleeve is a tubular element), the housing being adapted to catch the sleeve when the sleeve is dropped from surface (column 5, lines 24-26) and the caught sleeve permitting actuation of the tool between the first and second tool configurations (fig.2); and flow restriction means (144, 118) for permitting fluid flow actuation (fig.2, as the restriction means have smaller diameters than that of the pipe 20, their hydraulic resistance will increase the pressure acting on the sleeve 66 of the tool actuating it) of the tool when the activating sleeve has been caught in the body (fig.2).

The subject-matter of claim 1 is therefore not new and the claim does not meet the novelty requirement of Art. 33(2)PCT.

**V-2 Claims 2 to 6**

The features of the claims 2 to 6 are known from D1:

- claim 2 - see fig.2
- claim 3 - flow restrictions 144, 118
- claim 4 - implicit feature (PCT\GL\C IV 7.2) it allows access to the annulus (fig.2)
- claim 5 - see fig.1
- claim 6 - element 132

Therefore, claims 2 to 6 do not meet the requirement for novelty of Art. 33(2) PCT.

**V-3 Claim 7**

The features of claim 7 are known from D1 as they reflect the operation mode of the tool of claim 1.

Therefore, claim 7 does not meet the requirement for novelty of Art. 33(2) PCT.

**V-4 Claims 8 to 11**

The features of claims 8 to 11 relate to features known from D1 (claims 10 and 11) or to features which do not appear to define subject-matter involving an inventive step (claims 8 and 9) in combination with the features of the claims to which they append.

Therefore, claims 8 and 9 do not meet the requirement for inventive step of Art. 33(3) PCT and claims 10 and 11 do not meet the requirement for novelty of Art. 33(2) PCT as they can depend on claim 7.

**V-5 Claim 12**

The features of claim 12 are known from D1 since the step (e) is possible for each of the valves (170, 172, 174, 176, 178) of the tool.

Therefore, claim 12 does not meet the requirement for novelty of Art. 33(2) PCT.

**V-6 Claims 13, 14 and 18**

The features of the claims 13, 14 and 18 are known from D1 (see claims 1 and 2).

Therefore, claims 13, 14 and 18 do not meet the requirement for novelty of Art. 33(2) PCT.

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

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International application No. PCT/GB00/02712

**V-7 Claims 15 to 17**

The features of claims 15 to 17 are merely normal design possibilities (see for example D2, fig.6) used in order to avoid unexpected actuation.

Therefore, claims 15 to 17 do not meet the requirement for inventive step of Art. 33(3) PCT.

**V-8 Claim 19**

The features of claim 19 are known from D1 (fig.1 and 2). Therefore claim 19 does not meet the requirement for novelty of Art. 33(2) PCT.

**V-9 Claims 20 to 23**

The features of claims 20 to 23 relate to features known from D1 (claims 22 and 23) or to features which do not appear to define subject-matter involving an inventive step (claims 20 and 21) in combination with the features of the claims to which they append.

Therefore, claims 20 and 21 do not meet the requirement for inventive step of Art. 33(3) PCT and claims 22 and 23 do not meet the requirement for novelty of Art. 33(2) PCT as they can depend on claim 19.

**V-10 Claim 24**

The features of claim 24 are known from D1 (fig.1, insert 12 and means 88). Therefore, claim 24 does not meet the requirement for novelty of Art. 33(2) PCT.

**V-11 Claims 25 to 31 and 33**

The features of the claims 25 to are known from D1:

- claim 25 - fig.1 and 2
- claim 26 - fig.1 and 2
- claim 27 - 66, 12

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

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International application No. PCT/GB00/02712

- claim 28 - 12
- claim 29 - spring 88 releases the sleeve 66 to move when the pressure applied is superior to the elastic force exerted
- claim 30 - fig.2
- claim 31 - 66
- claim 33 - 98, 100

Therefore, claims 25 to 31 and 33 do not meet the requirement for novelty of Art. 33(2) PCT.

**V-12 Claim 32**

The feature of claim 32 is merely an alternative to the insert of D1 which is described also in D3 (fig.2). Therefore, claim 32 does not meet the requirement for inventive of Art. 33(3) PCT.

**V-13 Claim 34**

As the nature of the indexing of the tool is not unequivocally defined, the insert 12 can be seen as well as an indexing means which allow the actuation of the tool between said two positions. Therefore, claim 34 does not meet the requirement for novelty of Art. 33(2) PCT.

**V-14 Claim 35**

D4 describes also a downhole tool comprising an indexing mechanism based on a cam arrangement which provides a plurality of axial displacement positions between the parts of the tool (column 4, lines 32-35 and 40-41). Even if the tool of D4 comprises a valve stem instead of a tubular sleeve, the purpose of using the cam arrangement is to restrict the flow through the tool (column 4, lines 43-45). In order to have a better maintaining mechanism the skilled man would use the teaching of D4 to the tool of D1 arriving to the subject-matter of claim 35. Therefore, claim 35 does not meet the requirement for inventive step of Art. 33(3) PCT.

**VII - Certain defects**

- VII-1      The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).
- VII-2      Claim number "23" referred to on the first line of claim 29 should apparently read "24".
- VII-3      Contrary to the requirements of Rule 5.1(a)(ii)PCT, the relevant background art disclosed in documents D1, D4 is not mentioned in the description, nor are these documents identified therein.

**VIII - Certain observations (clarity)**

- VIII-1      Although apparatus claims 1 and 24 and method claims 7, 12 and 19 have been drafted as separate independent claims, they appear to relate effectively to the same subject-matter in their category and to differ from each other only with regard to the definition of the subject-matter for which protection is sought. The aforementioned claims therefore lack conciseness. Moreover, lack of clarity of the claims as a whole arises, since the plurality of independent claims makes it difficult to determine the matter for which protection is sought. Hence, the aforementioned claims do not meet the requirements of Article 6 PCT.

## PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference <b>AS/AM/P10844PC</b>	<b>FOR FURTHER ACTION</b> see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. <b>PCT/GB 00/ 02712</b>	International filing date (day/month/year) <b>14/07/2000</b>	(Earliest) Priority Date (day/month/year) <b>15/07/1999</b>
Applicant  <b>CHURCHILL, Andrew Philip</b>		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

## 1. Basis of the report

- a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of the sequence listing:

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ Certain claims were found unsearchable (See Box I).

3. ☐ Unity of invention is lacking (see Box II).

## 4. With regard to the title,

☐ the text is approved as submitted by the applicant.

☒ the text has been established by this Authority to read as follows:

**DOWNHOLE BYPASS VALVE**

## 5. With regard to the abstract,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the drawings to be published with the abstract is Figure No. 1

☒ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

☐ None of the figures.

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 00/02712

**A. CLASSIFICATION OF SUBJECT MATTER**  
IPC 7 E21B21/10

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 E21B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2 128 352 A (THOMAS A. CREIGHTON) 30 August 1938 (1938-08-30)	1, 2, 4, 5, 7-10, 12-30
Y	the whole document ---	32, 34, 35
X	US 4 645 006 A (TINSLEY PAUL J) 24 February 1987 (1987-02-24)  column 5, line 7-62; figures 1, 2 ---	1-14, 18-28, 31, 33
Y	US 5 499 687 A (LEE PAUL B) 19 March 1996 (1996-03-19) abstract; figures 2-7 ---	32
Y	EP 0 732 479 A (HALLIBURTON CO) 18 September 1996 (1996-09-18) page 16, line 18-56; figures 3, 5, 6 --- -/-	34, 35

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

## \* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&amp;" document member of the same patent family

Date of the actual completion of the international search

28 September 2000

Date of mailing of the international search report

06/10/2000

Name and mailing address of the ISA

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Authorized officer

van Berlo, A

## INTERNATIONAL SEARCH REPORT

International Application No.

PCT/GB 00/02712

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	GB 688 727 A (REUBEN C. BAKER) 11 March 1953 (1953-03-11) page 5, column 1, line 23 -column 2, line 89; claim 1; figures 1-6	1,7,12, 19,24
A	GB 2 304 763 A (DRILLTECH SERVICES) 26 March 1997 (1997-03-26) figure 4	1,7,12, 19,24
A	US 5 782 305 A (HICKS JOHN MICHAEL) 21 July 1998 (1998-07-21) column 1, line 61 -column 2, line 4; figure 1 column 2, line 15-25 column 2, line 51 -column 3, line 8 column 3, line 45-52	1,7,12, 19,24
A	WO 99 22114 A (BAIRD JEFFREY D) 6 May 1999 (1999-05-06) page 18, paragraph 3 page 21, paragraph 5 -page 22, paragraph 1 page 22, paragraphs 2,3; figures 1-6 page 24, paragraph 5 page 33, paragraphs 2,3	1,7,12, 19,24
A	GB 2 305 681 A (BAKER HUGHES INC) 16 April 1997 (1997-04-16) figures 1-5	1,7,12, 19,24
A	EP 0 860 583 A (SCHLUMBERGER TECHNOLOGY BV ; SCHLUMBERGER LTD (US)) 26 August 1998 (1998-08-26) abstract; claim 1	1,7,12, 19,24
P,A	WO 99 47789 A (CHURCHILL ANDREW PHILIP) 23 September 1999 (1999-09-23) page 12, line 7-11; figures 1,31,32	1,7,12, 19,24

## INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB 00/02712

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 2128352	A	30-08-1938	NONE	
US 4645006	A	24-02-1987	NONE	
US 5499687	A	19-03-1996	US 4889199 A	26-12-1989
EP 0732479	A	18-09-1996	US 5535767 A	16-07-1996
			AU 706618 B	17-06-1999
			AU 4808796 A	03-10-1996
			NO 961030 A	16-09-1996
GB 688727	A		NONE	
GB 2304763	A	26-03-1997	AU 710050 B	09-09-1999
			AU 6880096 A	19-03-1997
			CA 2230512 A	06-03-1997
			EP 0843773 A	27-05-1998
			WO 9708423 A	06-03-1997
			NO 980850 A	24-04-1998
US 5782305	A	21-07-1998	NONE	
WO 9922114	A	06-05-1999	AU 1195299 A	17-05-1999
GB 2305681	A	16-04-1997	US 5609178 A	11-03-1997
			AU 719036 B	04-05-2000
			AU 6584396 A	10-04-1997
			CA 2186173 A	29-03-1997
			NO 964118 A	01-04-1997
EP 0860583	A	26-08-1998	US 5927402 A	27-07-1999
			AU 5294598 A	27-08-1998
			AU 5294698 A	27-08-1998
			AU 718595 B	20-04-2000
			AU 5299198 A	27-08-1998
			AU 5537698 A	27-08-1998
			CA 2229004 A	19-08-1998
			CA 2229105 A	19-08-1998
			CA 2229881 A	19-08-1998
			CA 2229882 A	19-08-1998
			CN 1199254 A	18-11-1998
			CN 1192502 A	09-09-1998
			CN 1199130 A	18-11-1998
			CN 1199255 A	18-11-1998
			EP 0860584 A	26-08-1998
			EP 0860907 A	26-08-1998
			EP 0860902 A	26-08-1998
			NO 980682 A	20-08-1998
			NO 980683 A	20-08-1998
			NO 980684 A	20-08-1998
			NO 980685 A	20-08-1998
			US 5967816 A	19-10-1999
			US 5871052 A	16-02-1999
WO 9947789	A	23-09-1999	AU 2740799 A	11-10-1999